REMARKS

Reconsideration and continued examination of this application are respectfully requested.

The amendment to the claims further defines what applicants regard as their invention and/or are editorial in nature. Full support for the amendments can be found throughout the present application, for instance, paragraphs 23-25 of the present application as well as the examples. Accordingly, no questions of new matter should arise and entry of this amendment is respectfully requested.

At page 2 of the Office Action, the Examiner rejects claims 2-4, 7, 9, 10, and 12-14 under 35 U.S.C. §102(b) as being anticipated by Thompson (U.S. Patent No. 3,644,255) as exemplified by Stephenson (United States Statutory Invention Registration H1279). The Examiner asserts that the Stephenson reference is relied on solely for the teaching of inherent characteristics of the silanes of Thompson. The Examiner asserts that Thompson relates to a polyvinyl fluoride polymer, an aminopropyltriethoxy silane, and a methyl methacrylate/ butyl acrylate/ itaconic acid terpolymer. The Examiner further asserts that Thompson relates to silanes and the preparation of dispersions. The Examiner does admit that Thompson does not specifically mention that the silane is hydrolytically stable but relies on Stephenson to assert that these silanes are known to be hydrolytically stable. For the following reasons, this rejection is respectfully traversed.

The present invention relates to a cross-linkable fluoropolymer dispersion. To clarify claim 1, the hydrolytically stable silane is referred to now as at least one sterically hindered silane containing group which is preferably a sterically hindered organo silane present in a monomer. Claim 2 and the remaining original claims of the present application recites similar language. Claim 2 further indicates that the sterically hindered organo silane is polymerized in the backbone

of the acrylic resin or fluoropolymer or both. As shown in the examples of the present application, unhindered organo-silane monomers like MAPTMS, MAPTES, and MAPDES led to premature cross-linking taking place during synthesis or after a short term storage at room temperature. The present application which uses sterically hindered components for the silane avoids cross-linking during synthesis and are relatively storage stable for two to three weeks or even longer as shown in the examples.

Unlike the claimed invention, Thompson does not use sterically hindered silanes. A hydrolytically stable silane is not automatically the same as a sterically hindered silane such as an organo-silane monomer. In fact, the new claims which define preferred sterically hindered organo-silane monomers should assist the Examiner in comparing the silane chemistry and one will readily note the difference in chemistry. The Examiner's attention is further directed to paragraph 25 of the present application which notes the preferred sterically hindered chemistry.

Also, the Examiner's attention is directed to paragraph 81 of the present application which used MAPDES in one of the examples which led to premature cross-linking. These organo-silane monomers were characterized as unhindered in the present application and clearly the effects of an unhindered silane monomer is shown in the present application. It is respectfully noted that this type of chemistry, MAPDES, is in the same family, namely ethoxy silane type chemistry, as the silane set forth in Thompson and relied upon by the Examiner. It is clear that this ethoxy silane chemistry is not sterically hindered and would promote premature cross-linking as shown in the comparative data in the present application. Based on this evidence, it is clear that Thompson does not teach or suggest cross-linkable fluoropolymer dispersions or blends that include a sterically hindered silane containing group.

Finally, applicants do wish to point out that the reliance on Stephenson by the Examiner is not totally pertinent to the present application. Stephenson relates to polymers in a solvent solution and not an aqueous solution. Thus, any reliance on Stephenson with Thompson would be difficult since a solvent solution is a completely different polymerization system. Accordingly, for these reasons, this rejection should be withdrawn.

At page 3 of the Office Action, the Examiner rejects claim 15 under 35 U.S.C. §102(b) as being anticipated by Tomonori et al. (based on the machine JPO translation of JP 05-186907). The Examiner asserts that paragraph 0004 of this translation shows a polymer blend of fluoropolymer and a vinyl polymer. The Examiner further asserts that Tomonori et al. shows that the fluoropolymer may be copolymerized with a silyl monomer. For the following reasons, this rejection is respectfully traversed.

As stated above, the present application relates to the presence of sterically hindered silane or silane containing groups in the polymer which contains acrylic units, vinyl units, or both. The silane set forth in Tomonori et al. in no way is a sterically hindered silane. As indicated, paragraph 25 of the present application shows preferred sterically hindered silanes. A quick comparison clearly shows that the chemistries are quite different. Since Tominori et al. does not show any fluoropolymer which contains a sterically hindered silane or silane containing group, this rejection should be withdrawn.

At the bottom of page 3 of the Office Action, the Examiner rejects claims 1, 5, 16, and 18-21 under 35 U.S.C. §103(a) as being unpatentable over Shimizu et al. (English translation of JP 05-170909) in view of Chen et al. (U.S. Patent No. 5,621,038). The Examiner asserts that paragraph 0040 of Shimizu shows an aqueous dispersion of fluoropolymers that are used in compositions.

The Examiner further asserts that example one of Shimizu shows the synthesis of a fluoropolymer dispersion that is prepared through the use of a fluoropolymer as a seed polymer where acrylate monomers and silane monomers are added. The Examiner further asserts that Chen et al. shows the use of alkoxy silanes which the Examiner asserts are sterically hindered. The Examiner further asserts that it would be obvious to combine the teachings of Chen et al. with Shimizu et al. For the following reasons, this rejection is respectfully traversed.

Shimizu was addressed in the present application. The Examiner's attention is directed to page 3. As stated in the present application, Shimizu relates to aqueous dispersions prepared by conducting an organo-silane condensation reaction in the presence of a fluoropolymer aqueous dispersion. Hydrolytically unstable silanes are used to form in situ polysiloxane polymers in the aqueous dispersion. As clearly set forth in Shimizu et al., Shimizu et al. specifically teaches that the reaction of the silane is desirable. This would be the opposite of why one would use a sterically hindered silane. Furthermore, Shimizu teaches that the siloxane is used up. Clearly, Shimizu does not want to use a hydrolytically stable silane which would not be reacted. Furthermore, a quick comparison of the organo silane compounds described in Shimizu, based on the English translation, would further confirm the difference in chemistry between Shimizu and that of the present application. Also, the Examiner's attention is directed to paragraph 10 of Shimizu et al. wherein it is clear that Shimizu teaches that with the use of a condensation reaction of an organo-silane in the presence of an aqueous dispersion of a granular fluoropolymer, an aqueous dispersion of the fluoropolymer and polysiloxane granules can be obtained. This paragraph clearly shows that Shimizu hydrolyzes the silane group in the condensation reaction to form polysiloxane granules. This is quite different from the present application with the use of sterically hindered organo silane

components.

Since Shimizu clearly wants the silane group to hydrolyze in the condensation reaction and does not use sterically hindered silanes, one skilled in the art would not combine the teachings of Chen et al. with Shimizu et al. since the chemistries and goals are quite different. Chen et al. specifically states that a sterically hindered alkoxylated silane group is used while Shimizu specifically states that hydrolytically unstable silane which hydrolyzes in the condensation reaction is used. The two chemistries are opposite of each other and therefore would not be combinable. Accordingly, for this reason, this rejection should be withdrawn.

At page 5 of the Office Action, the Examiner rejects claims 6 and 11 under 35 U.S.C. §103(a) as being unpatentable over Thompson (U.S. Patent No. 3,644,255) as exemplified by Stephenson (United States Statutory Invention Registration H1279) as applied in claim 2 above, and further in view of Tomonori et al. The Examiner asserts that Thompson shows the limitations of claim 2 as previously described in the earlier described rejection but does not teach or suggest fluoropolymers that are copolymers. The Examiner relies on Tomonori et al. to show similar compositions which are copolymers. For the following reasons, this rejection is respectfully traversed.

The differences between the claimed invention and these references have been addressed above. As indicated, Thompson does not teach or suggest sterically hindered silane components. Furthermore, Tomonori et al. does not teach or suggest sterically hindered silane components as used in the present application. Furthermore, the deficiencies of Stephenson have been addressed above. Accordingly, for these reasons, the rejection should be withdrawn.

At the bottom of page 5 of the Office Action, the Examiner rejects claim 8 under 35 U.S.C.

§103(a) as being unpatentable over Thompson as exemplified by Stephenson as applied to claim 2 above, and further in view of Cavanaugh (U.S. Patent No. 4,514,537). The Examiner relies on Thompson and Stephenson for the same reasons as discussed previously. The Examiner further asserts that Cavanaugh shows blends of fluoropolymers and fluorinated acrylic polymers. For the following reasons, this rejection is respectfully traversed.

The comments set forth above with respect to Thompson and Stephenson apply equally here. Furthermore, Cavanaugh relates to a silane that is post-added to the polymer. Thus, the silane is not part of any polymer. As discussed at page 3 of the present application, the silane functional materials of Cavanaugh are a post-additive to the fluoropolymer dispersion and therefore relates to a different polymer chemistry. Thus, this reference alone or combined with Thompson and/or Stephenson still would not teach or suggest the claimed invention. Accordingly, this rejection should be withdrawn.

At the bottom of page 6 of the Office Action, the Examiner rejects claim 17 under 35 U.S.C. §103(a) as being unpatentable over Tsuda et al. (U.S. Patent No. 5,712,335) in view of Chen et al. (U.S. Patent No. 5,621,038). The Examiner asserts that Tsuda et al. relates to the preparation of fluoropolymers by copolymerization of a fluoropolymer with a silane. The Examiner relies on Chen et al. to assert the use of alkoxy silanes which are sterically hindered to provide stability in an aqueous medium. For the following reasons, this rejection is respectfully traversed.

With respect to Tsuda et al., this patent relates to unstable silanes which are not sterically hindered. The Examiner's attention is directed to the discussion of EP 736 583 at page 3 of the present application which is the counterpart of this patent. Tsuda et al. relates to aqueous dispersions containing organosilicon compounds admixed with an aqueous fluoropolymer

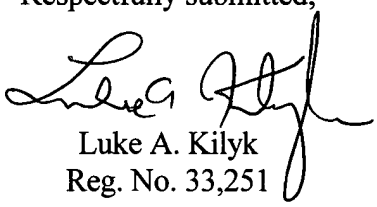
dispersion. The admixture of the organosilicon compounds to the fluoropolymer dispersion is preferably done after the polymerization to make the fluoropolymer dispersion. Also, this patent does not address the need for storage stability with fluoropolymer dispersions to prevent hydrolysis/condensation of the silane functional groups. Since the silane is not added as part of the polymer but is added separately, the chemistry of Tsuda is quite different from the present invention. Furthermore, this chemistry is quite different from Chen et al. One skilled in the art would not be capable of combining the chemistry of Chen et al. with Tsuda et al. due to the different approaches and chemistry. Tsuda et al. relates to very unstable and unhindered silanes which are post added to the preformed polymer while Chen et al. relates to sterically hindered alkoxylated silanes which are added at a different point in time during the reaction. Accordingly, the chemistries are quite different and uncombinable. For this reason, this rejection should be withdrawn as well.

CONCLUSION

In view of the foregoing remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 50-0925. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



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